

THREE-DIMENSIONAL TAPERED OPTICAL WAVEGUIDES AND METHODS OF MANUFACTURE THEREOF

ABSTRACT OF THE DISCLOSURE

5 A method for fabricating a three-dimensional tapered optical waveguide and a
three-dimensional tapered optical waveguide are shown and described. The
fabrication method takes advantage of RIE lag to create a shaped trench in a lower
cladding layer that has one end that is wider and deeper and than the opposite end.
After the trench is filled with core material, a second RIE process is carried out which
10 takes advantage of reverse RIE lag to etch the core material at a faster rate at the
shallower and narrower end and at a slower rate at the wider and deeper end. The
result is shaped core of a three-dimensional tapered optical waveguide that is wider
and deeper at one end and tapers towards a shallower and narrower end for improved
optical signal transmission.